

## Supplementary Material

### ***N*-Heterocyclic carbene-catalyzed domino hydroacylation/Stetter reactions of salicyl alkynylphosphonates and aromatic aldehydes**

Zhen-Qiang Wang, Ying Wang, and De-Qing Shi\*

*Key Laboratory of Pesticide and Chemical Biology of Ministry of Education,  
College of Chemistry, Central China Normal University, Wuhan 430 079, P. R. China  
E-mail: [chshidq@mail.ccnu.edu.cn](mailto:chshidq@mail.ccnu.edu.cn)*

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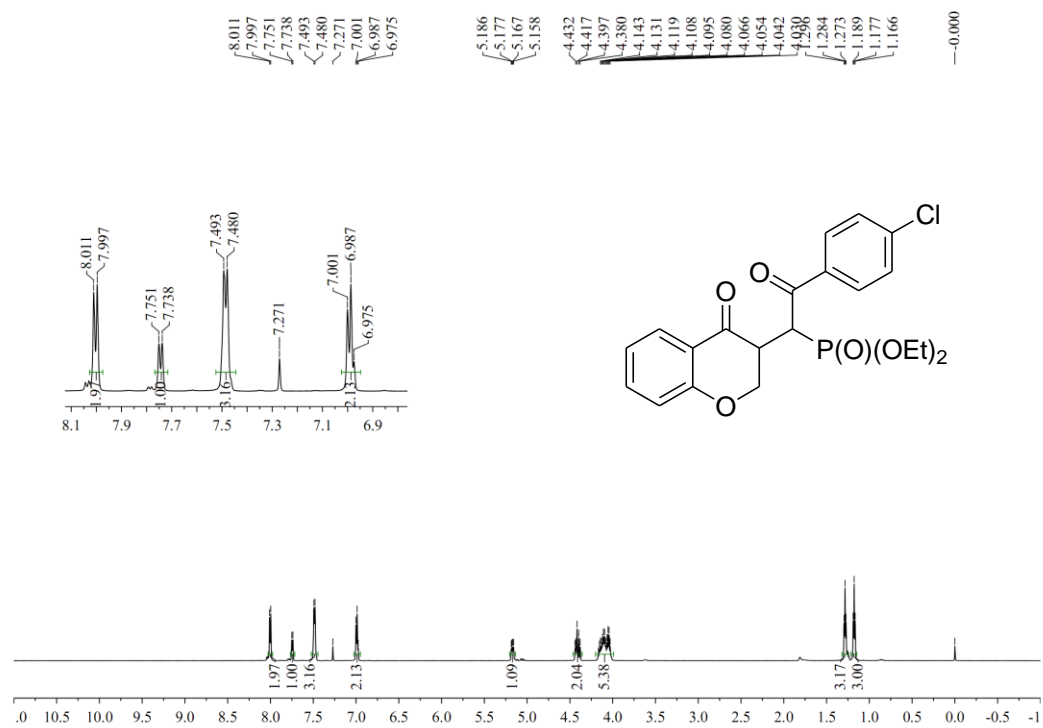


Figure S1. <sup>1</sup>H NMR spectrum (600 MHz, CDCl<sub>3</sub>) of Diethyl 2-(4-chlorophenyl)-1-(4-oxochroman-3-yl)-2-oxoethyl phosphonate (2a)

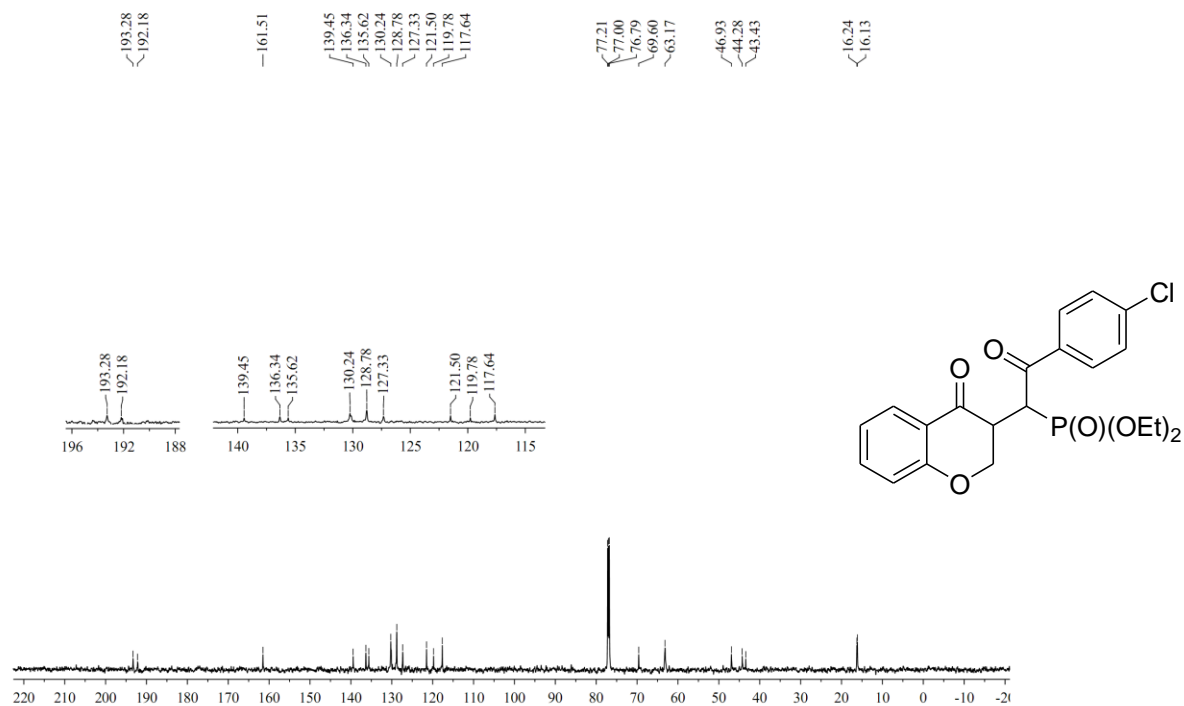


Figure S2. <sup>13</sup>C NMR spectrum (150 MHz, CDCl<sub>3</sub>) of Diethyl 2-(4-chlorophenyl)-1-(4-oxochroman-3-yl)-2-oxoethyl phosphonate (2a)

- 18.84

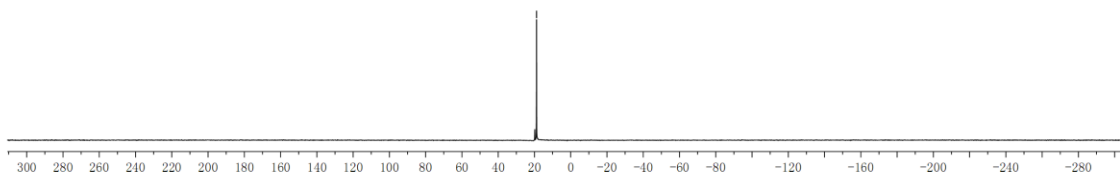
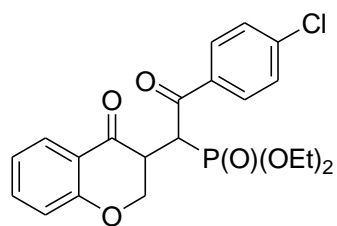


Figure S3.  $^{31}\text{P}$  NMR spectrum (243 MHz,  $\text{CDCl}_3$ ) of Diethyl 2-(4-chlorophenyl)-1-(4-oxochroman-3-yl)-2-oxoethyl phosphonate (2a)

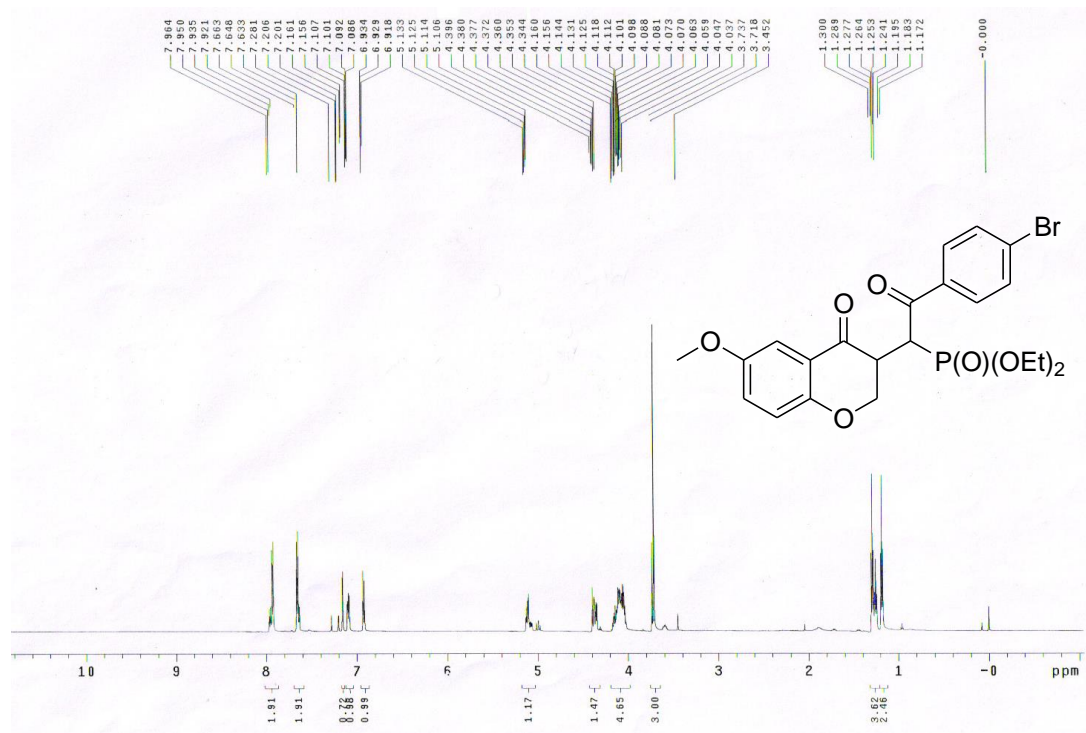


Figure S4. <sup>1</sup>H NMR spectrum (600 MHz, CDCl<sub>3</sub>) of Diethyl 2-(4-bromophenyl)-1-(6-methoxy-4-oxochroman-3-yl)-2-oxoethyl phosphonate (2b)

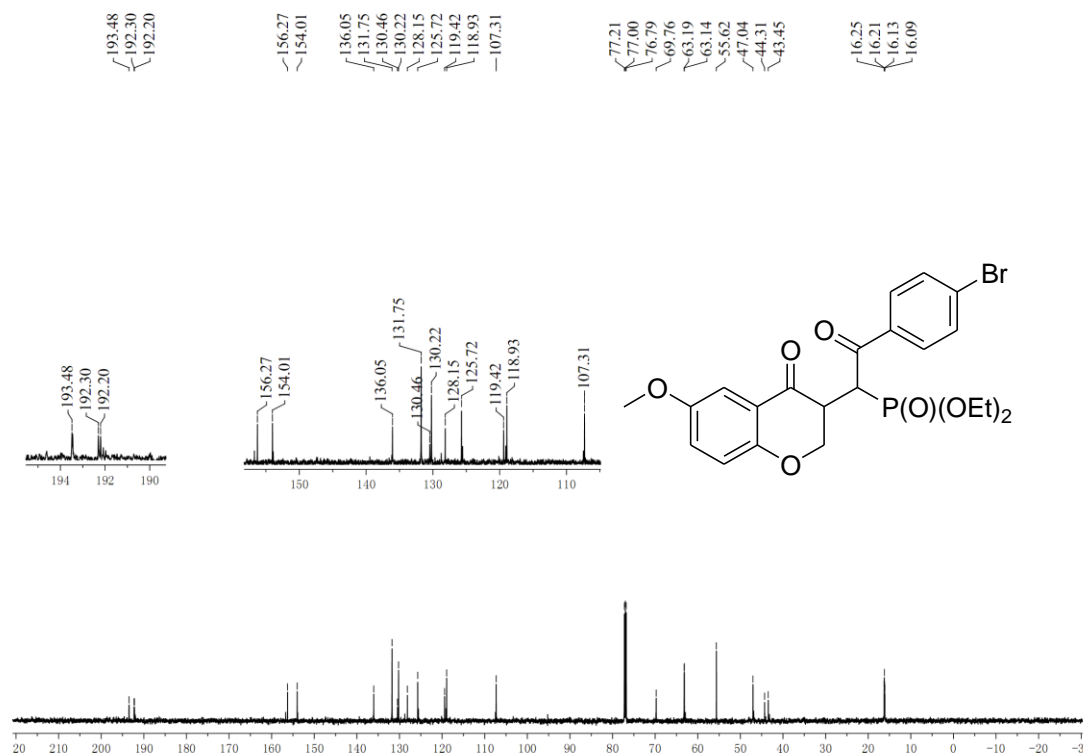


Figure S5. <sup>13</sup>C NMR spectrum (150 MHz, CDCl<sub>3</sub>) of Diethyl 2-(4-bromophenyl)-1-(6-methoxy-4-oxochroman-3-yl)-2-oxoethyl phosphonate (2b)

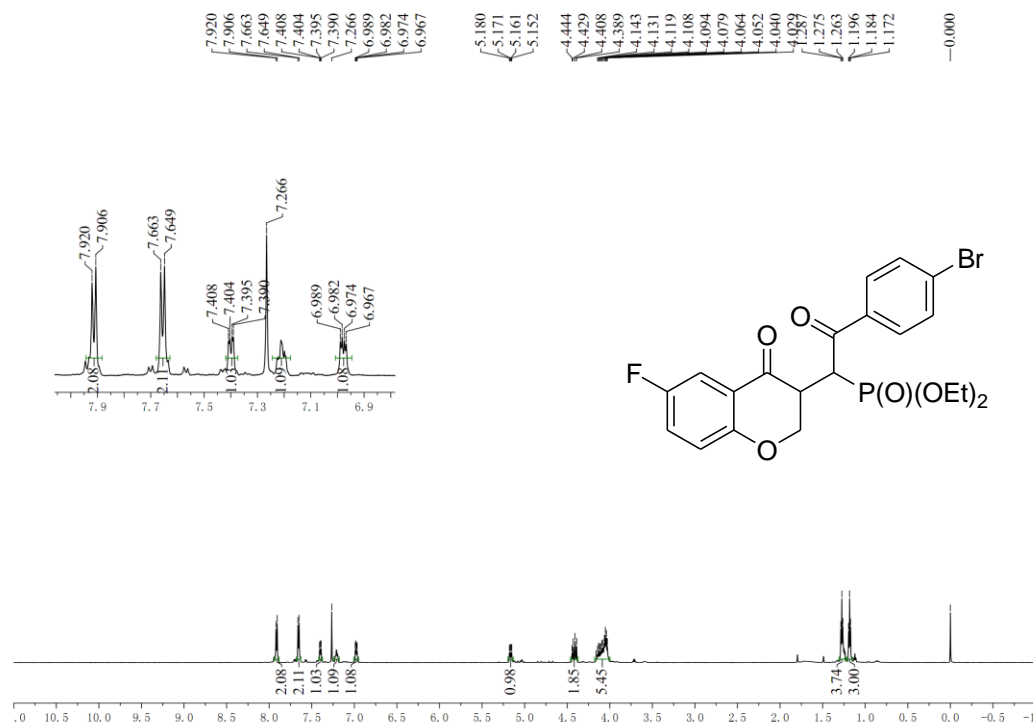


Figure S6. <sup>1</sup>H NMR spectrum (600 MHz, CDCl<sub>3</sub>) of Diethyl 2-(4-bromophenyl)-1-(6-fluoro-4-oxochroman-3-yl)-2-oxoethyl phosphonate (2c)

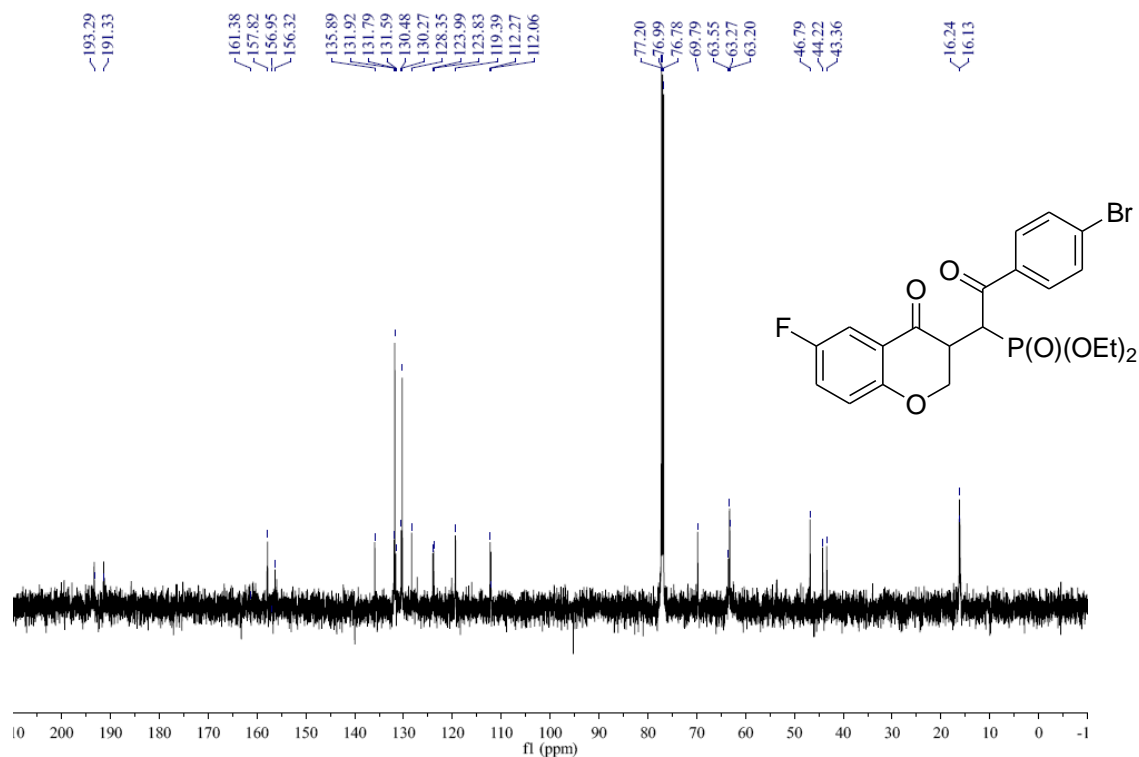


Figure S7. <sup>13</sup>C NMR spectrum (150 MHz, CDCl<sub>3</sub>) of Diethyl 2-(4-bromophenyl)-1-(6-fluoro-4-oxochroman-3-yl)-2-oxoethyl phosphonate (2c)

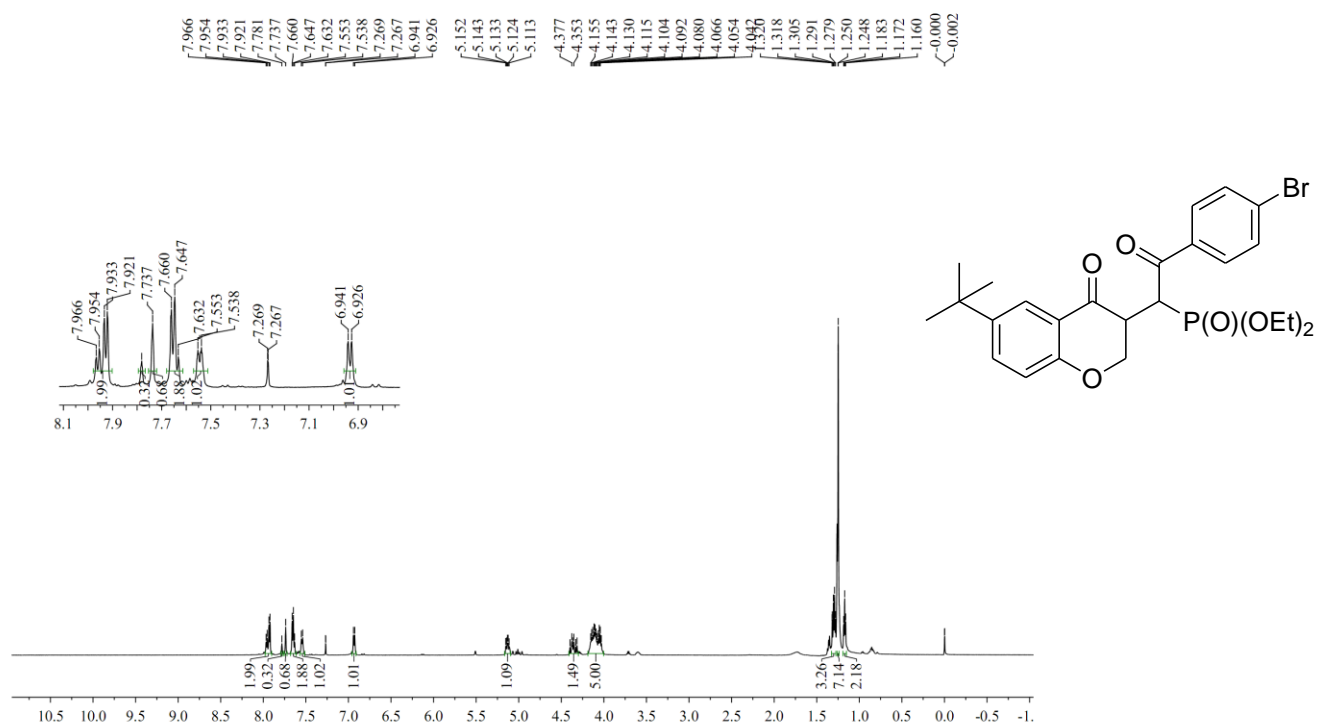


Figure S8. <sup>1</sup>H NMR spectrum (600 MHz, CDCl<sub>3</sub>) of Diethyl 2-(4-bromophenyl)-1-(6-tert-butyl-4-oxo chroman-3-yl)-2-oxoethyl phosphonate (2d)

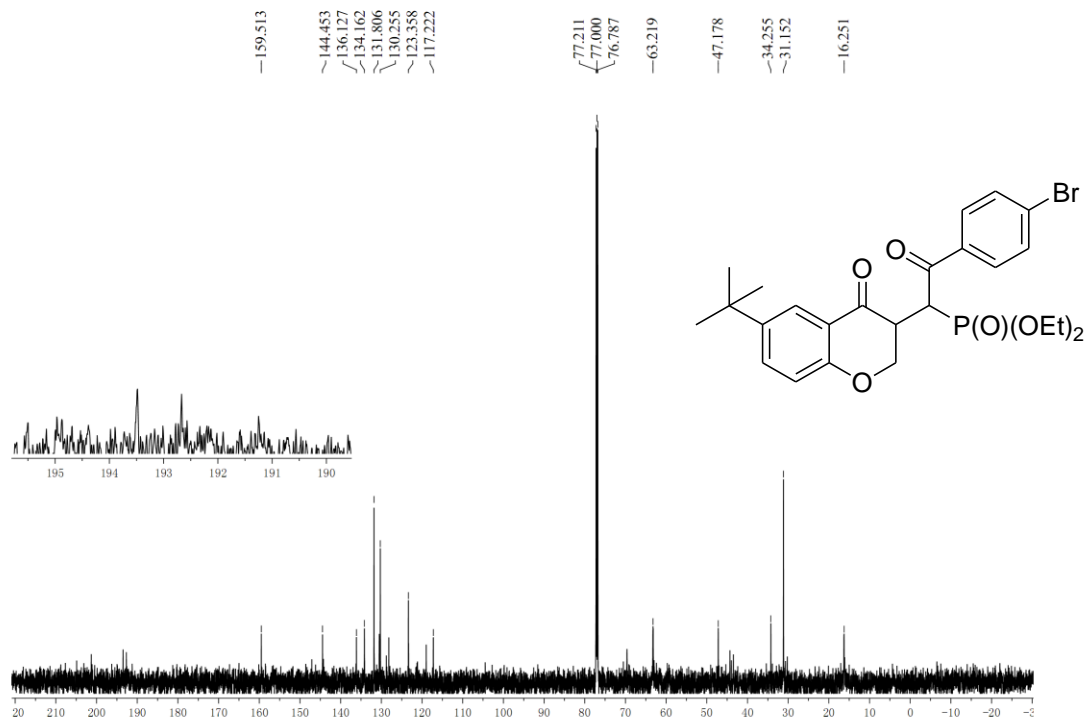


Figure S9. <sup>13</sup>C NMR spectrum (150 MHz, CDCl<sub>3</sub>) of Diethyl 2-(4-bromophenyl)-1-(6-tert-butyl-4-oxo chroman-3-yl)-2-oxoethyl phosphonate (2d)

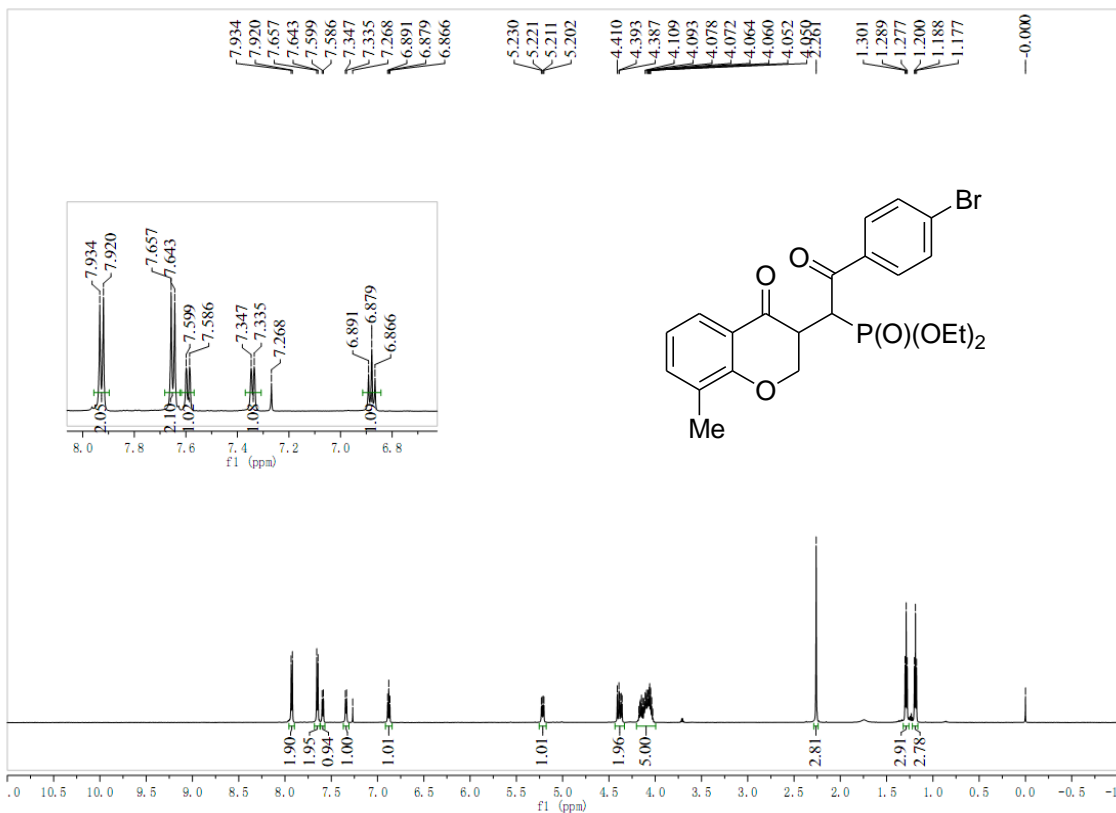


Figure S10.  $^1\text{H}$  NMR spectrum (600 MHz,  $\text{CDCl}_3$ ) of Diethyl 2-(4-bromophenyl)-1-(8-methyl-4-oxo chroman-3-yl)-2-oxoethyl phosphonate (2e)

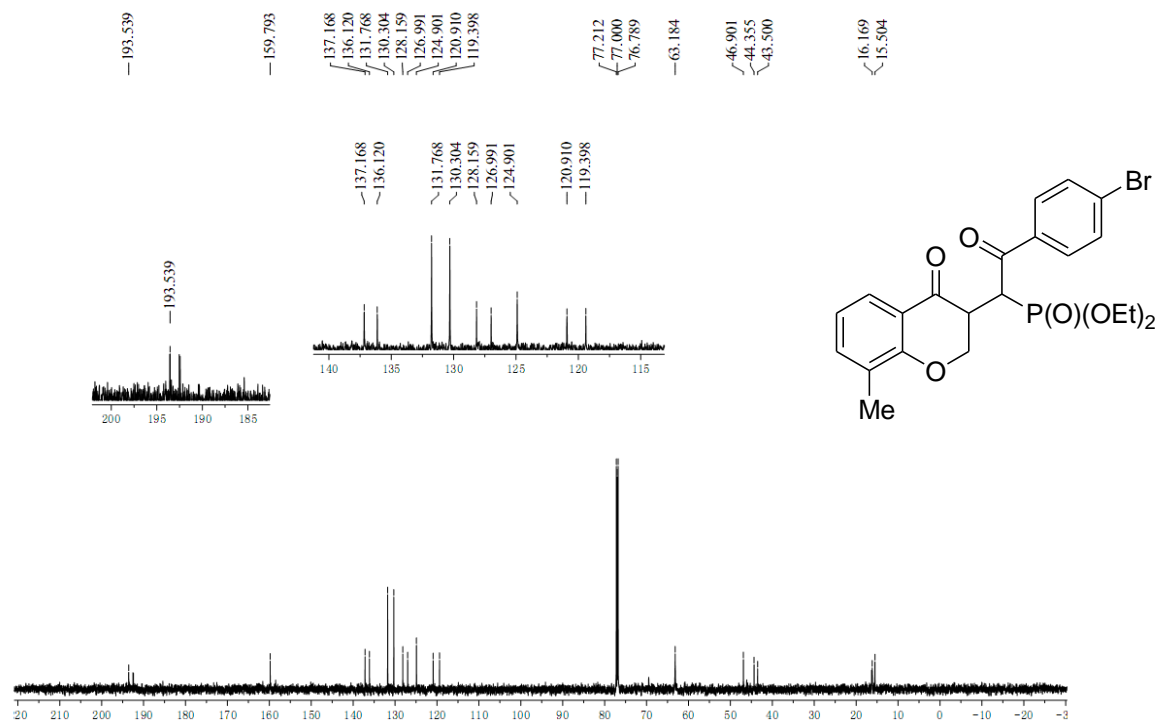


Figure S11. <sup>13</sup>C NMR spectrum (150 MHz, CDCl<sub>3</sub>) of Diethyl 2-(4-bromophenyl)-1-(8-methyl-4-oxochroman-3-yl)-2-oxoethyl phosphonate (2e)

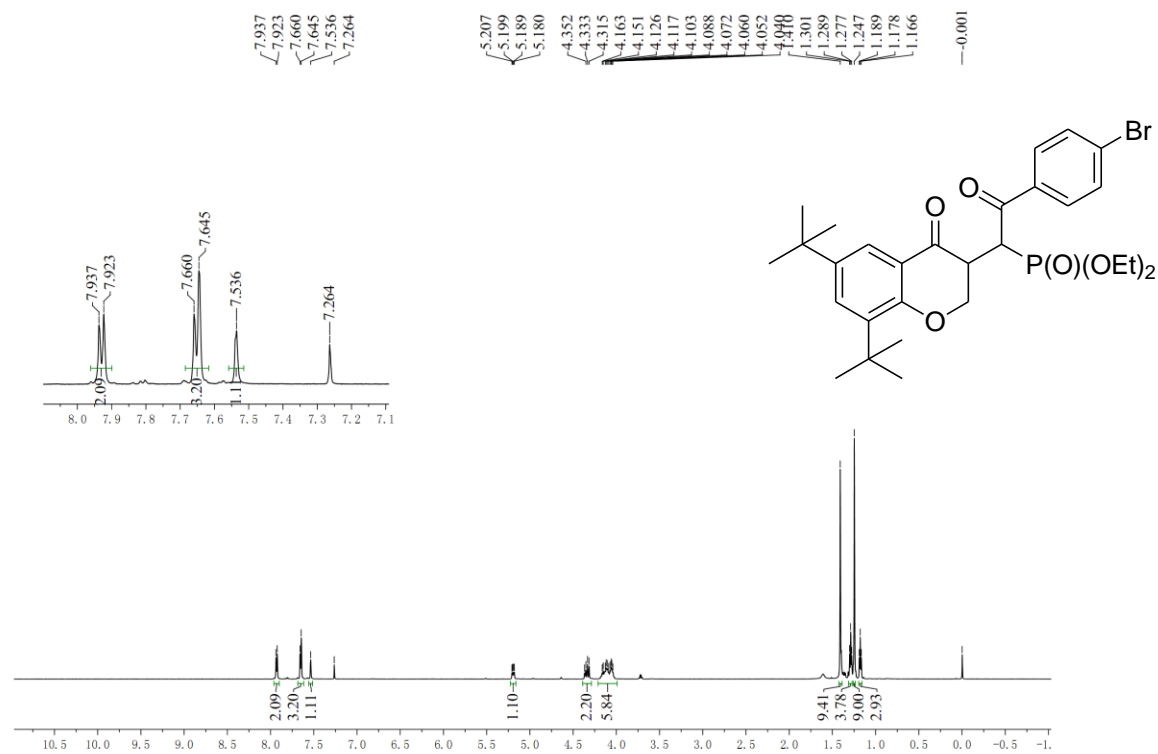


Figure S12. <sup>1</sup>H NMR spectrum (600 MHz, CDCl<sub>3</sub>) of Diethyl 2-(4-bromophenyl)-1-(6,8-di-tert-butyl-4-oxochroman-3-yl)-2-oxoethyl phosphonate (2f)



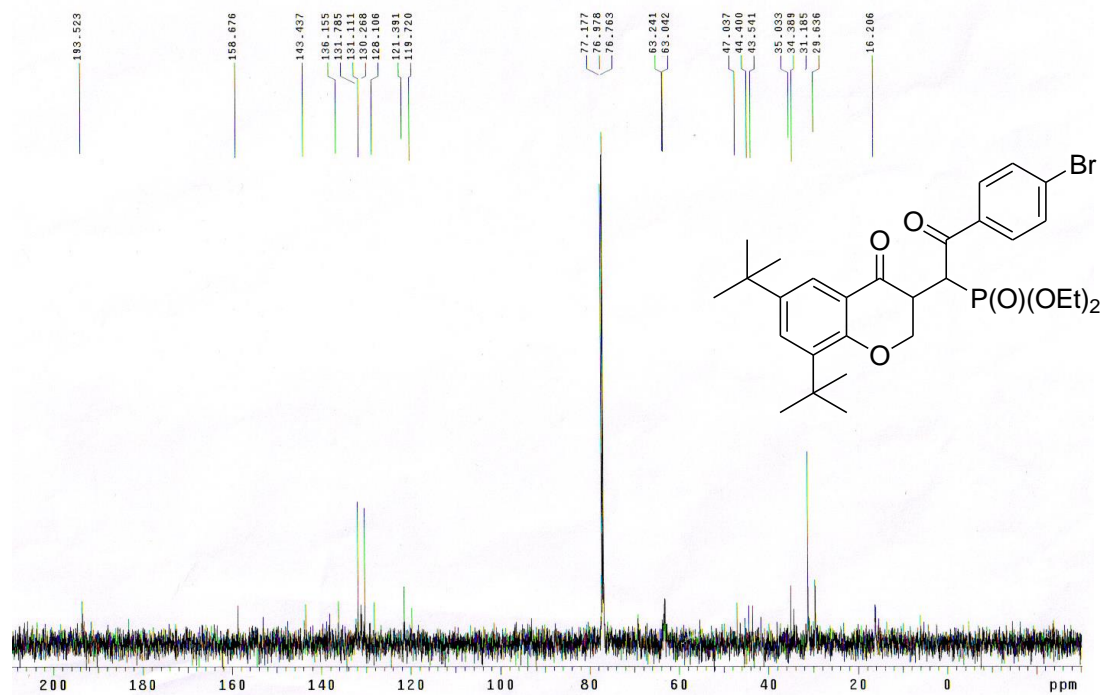


Figure S13.  $^{13}\text{C}$  NMR spectrum (150 MHz,  $\text{CDCl}_3$ ) of Diethyl 2-(4-bromophenyl)-1-(6,8-di-tert-butyl-4-oxo chroman-3-yl)-2-oxoethyl phosphonate (2f)

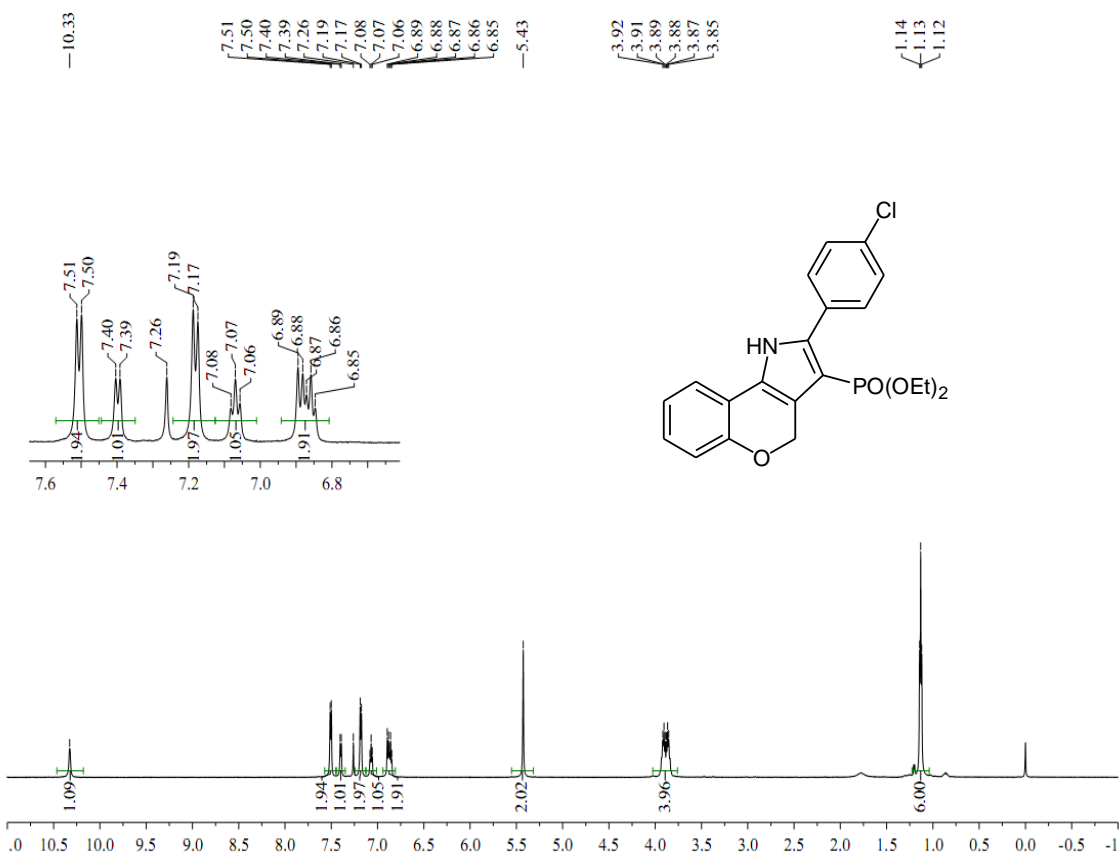


Figure S14. <sup>1</sup>H NMR spectrum (600 MHz, CDCl<sub>3</sub>) of diethyl 2-(4-chlorophenyl)-1,4-dihydrochromeno [4,3-b]pyrrol-3-ylphosphonate (4)